

ABSTRACT

The invention concerns high sensitivity light scattering detection and its application to evaporative light scattering detection in liquid chromatography. The exemplary embodiment includes a detection cell to accept particles suspended in a gas stream and permit a polarized light beam to pass through a trajectory of the particles and gas stream. A sample light detector is disposed to detect light scattered in the detection cell. A light trap accepts the polarized beam after it passes through the detection cell. The light trap includes an elongated housing through which the polarized beam passes, and light absorptive material within the elongated housing. An absorptive filter is aligned such that the angle of incidence of the light beam upon the filter approximates Brewster's angle and the electric field vector of the beam is aligned with the plane of incidence between the beam and the filter. Other embodiments of the invention provide increased light collection. Embodiments of the invention include temperature-controlled entrance and exit ports that control particle trajectory. Embodiments of the invention include a reference cell disposed between a detection cell and a light trap, and the reference cell includes lensing and a spherical mirror to direct light toward a reference light detector. The reference light detector provides a reference signal that may be used with noise cancellation circuitry, operating in either voltage or current mode, to reduce light source noise in the sample signal.